

Don't Dismiss the Swelling: A Rare Case of Tenosynovial Giant Cell Tumor in a Young Woman's Finger – A Case Report

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Learning Point of the Article:

Persistent finger swelling in young patients warrants early investigation to rule out rare conditions like TGCT and prevent delayed diagnosis.

Abstract

Introduction: Tenosynovial giant cell tumor (TGCT), also known as giant cell tumor of the tendon sheath, is a benign but potentially aggressive soft-tissue tumor that commonly affects the small joints of the hand. It typically presents as a painless, slow-growing mass, often leading to delayed diagnosis. Early recognition is crucial to prevent joint damage and functional impairment.

Case Report: We present the case of a 26-year-old female who reported sudden onset pain and swelling in her right middle finger without any history of trauma. Initial radiographs were soft-tissue swelling noted. Magnetic resonance imaging revealed a benign soft-tissue lesion suggestive of TGCT. Surgical excision followed by histopathological examination confirmed the diagnosis. Post-operative recovery was uneventful, and the patient regained full function without recurrence at the 6-month follow-up.

Conclusion: This case underscores the importance of considering TGCT in the differential diagnosis of acute finger swelling, even in the absence of trauma. Early imaging and surgical intervention are key to preventing potential complications.

Keywords: Tenosynovial giant cell tumor, giant cell tumor of tendon sheath, finger swelling, surgical excision, case report.

Introduction

Tenosynovial giant cell tumor (TGCT) is a benign proliferative lesion arising from the synovial lining of tendon sheaths, bursae, or joints. It is the second most common soft-tissue tumor of the hand, predominantly affecting females between the ages of 30 and 50 [1, 2]. Typically presenting as a painless, slow-growing mass, TGCT can sometimes manifest with pain and rapid progression, leading to diagnostic challenges [3, 4].

The etiology of TGCT remains uncertain, with theories suggesting both neoplastic and inflammatory origins. Some studies have identified chromosomal abnormalities, supporting

a neoplastic process [5]. While trauma has been implicated in some cases, a definitive causal relationship has not been established [6, 7].

Imaging plays a pivotal role in the diagnosis. While plain radiographs may be normal, magnetic resonance imaging (MRI) is more sensitive, often revealing a well-defined lesion with characteristic signal intensities. Histopathological examination remains the gold standard for diagnosis [8, 9].

Case Report

A 26-year-old right-handed female presented with a 2-week

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Author's Photo Gallery



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Figure 1: Clinical images front view.



Figure 2: Clinical picture on lateral view.

history of sudden onset pain and swelling in her right middle finger (Fig. 1 and 2). The pain was progressive and exacerbated by movement. There was no history of trauma, systemic symptoms, or prior similar episodes.

On examination, there was localized swelling over the volar aspect of the middle phalanx of the right middle finger. The mass was firm, tender, and non-mobile. Range of motion was slightly restricted due to pain.

Plain radiographs of the right hand showed soft-tissue swelling (Fig. 3). Given the clinical suspicion, an MRI was performed (Fig. 4), revealing a small lobulated T1 and T2 hypointense subcutaneous soft-tissue lesion in the middle finger at the proximal and middle phalangeal level, extending between the flexor tendon and middle phalanx, measuring approximately 16

× 14 × 10 mm (CC × TR × AP), with surrounding soft-tissue edema. No evidence of bony infiltration was noted. The features were suggestive of a benign soft-tissue lesion (?TGCT). A small focal vascular ectasia was also noted in the index finger, measuring approximately 9 × 5 mm.

The patient underwent surgical excision under regional anesthesia. Intraoperatively (Fig. 5), a well-encapsulated, brownish mass was identified arising from the flexor tendon sheath. Complete excision was achieved without complications.

Histopathological analysis (Fig. 6) confirmed the diagnosis of TGCT, showing multiple fragments of fibrocollagenous tissue with focal synovioocyte lining, proliferating capillaries, foamy histiocytes, neutrophils, lymphocytes, plasma cells, hemosiderin-laden macrophages, multinucleated giant cells, and areas of hemorrhage and fibrinoid necrosis [10].

At the 6-month follow-up, the patient was asymptomatic with full range of motion and no signs of recurrence.

Discussion

TGCTs are benign lesions but can be locally aggressive, leading to joint destruction if not treated promptly [5, 11]. They most commonly affect the fingers, especially the index and middle fingers [1, 2]. While the typical presentation is a painless mass, pain and rapid growth, as seen in our case, can occur and may lead to



Figure 3: Pre-operative X-ray of the right hand [(AP & lateral view)] shows soft-tissue swelling noted over 3rd middle phalanx of the right hand.



Figure 4: Small lobulated hypointense subcutaneous soft-tissue lesion is seen in the middle finger at the proximal and middle phalangeal level.



Figure 5: Intra operative pictures.

misdiagnosis or delayed treatment [3,4,7].

MRI is the imaging modality of choice, providing detailed information about the lesion's extent and its relationship with surrounding structures [9,12]. Surgical excision remains the mainstay of treatment. Complete removal is essential to minimize the risk of recurrence, which has been reported in up to 45% of cases, especially if excision is incomplete [5,8].

Our case highlights the atypical presentation of TGCT with acute pain and swelling, emphasizing the need for clinicians to maintain a high index of suspicion for such lesions, even in the absence of trauma [4,6,13].

Conclusion

This case underscores the importance of considering TGCT in the differential diagnosis of acute finger swelling, particularly in young adults. Early imaging and surgical intervention are crucial to prevent complications and ensure optimal functional outcomes.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

Name :	[REDACTED]	Collection :	10/05/2025 4:36 PM
Patient No :	[REDACTED]	Report :	14/05/2025 9:47 AM
Age / Sex :	26 Year(s) / Female	OP / IP :	IP
Ref. Dr :	[REDACTED]	LabNo :	[REDACTED]

Histopathology Report	
Clinical History :	Pain and swelling right middle finger
Clinical Diagnosis :	? Tenosynovial giant cell tumor right middle finger
Specimen No :	KMH-1324/25
Specimen or Procedure :	Right middle finger swelling
Gross Finding :	Received multiple grey brown to grey white soft tissue altogether measuring 1.6x1.4x1 cm. (All embedded)
Microscopy :	Sections studied show multiple fragments of fibrocollagenous tissue with focal lining by synoviocytes along with numerous proliferating capillaries. Also seen are foamy histiocytes, neutrophils, lymphocytes, plasma cells and hemosiderin laden macrophages and multinucleated giant cells seen. Also seen are areas of haemorrhage and fibrinoid necrosis.
No evidence of atypia / malignancy seen in the sections studied.	
Impression :	Right middle finger swelling : Features are suggestive of Tenosynovial giant cell tumor. Localized type. (Giant cell tumor of tendon sheath)
The above report is an opinion based on the histomorphology of the submitted sample. Kindly discuss if there is any clinical or radiological discordance.	
Gross specimens will be discarded after a period of one month. Slides and blocks will be retained for a period of 5 years from the date of report.	

Figure 6: Histopathology report.

Clinical Message

Tenosynovial giant cell tumor should be considered in the differential diagnosis of acute finger swelling, even in the absence of trauma. Although classically presenting as a painless, slow-growing mass, TGCT can occasionally manifest with sudden pain and inflammation, mimicking more common conditions like infection or injury. Early use of MRI and timely surgical excision are essential to confirm the diagnosis, prevent local tissue damage, and preserve joint function.

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Consent: The authors confirm that informed consent was obtained from the patient for publication of this case report

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